

Science in the Park

Kittlitz's Murrelets



© Marc Romano/USGS

Up near the glaciers, a small tan-and-white seabird quickly dives beneath the surface as you approach. You have just caught a rare glimpse of one of the least-understood birds in North America: Kittlitz's murrelet, *Brachyramphus brevirostris*.

They nest in mountainous areas recently uncovered by glaciers and it is difficult to monitor their numbers at sea. Perhaps 95 percent of this bird's worldwide population breeds in Alaska with the rest breeding in the Russian Far

East. Glacier Bay hosts a large proportion of the world population, perhaps as much as 20 percent. Unfortunately, surveys reveal that their numbers in Alaska have declined 80 to 90 percent in the past decade. Kittlitz's murrelets may soon be listed as a threatened or endangered species on the federal Endangered Species List.

A multi-year study is underway to more fully understand this bird, including its ecology and use of habitats in Glacier Bay, and the impacts (if any) of vessels on these birds as they forage for food. Researchers are hoping to discover what is causing, and how to reverse, this population decline.

Principal investigators: Marc Romano and Dr. John Piatt, USGS Alaska Science Center
Park Liaison: Mary Kralovec, NPS

Bear Habitat and Campsite Risk Assessment

The shoreline of Glacier Bay is a popular place for kayakers and for bears. Kayakers camp and take rest breaks on beaches, while bears travel and forage along the shore. How can they both share the beaches with minimal disturbance to the other?

In recent years, a study has been underway in Glacier Bay to try to predict where people are most likely to encounter bears. Researchers surveyed beaches and analyzed potential camping areas looking at such factors as quality of bear forage in the area, animal travel corridors, visibility and bear sign.

In 2004 and 2005, researchers will use time-lapse photography and collect shed-hair samples to find out how many and how often bears use certain areas of concern. The data will help biologists understand how bears use these sites, and provide park managers with recommendations on how to reduce bear/human conflicts and minimize displacement of bears from key habitats. Park managers can then more effectively manage backcountry areas for both people and bears.

Principal investigators: Tom S. Smith, USGS
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The Acoustic World of Whales



Besides the whoosh of a whale's "blow" as it exhales or the sharp whap of a flipper slap, humpback whales may seem like silent creatures living in a silent world. Yet, they are vocal animals that make a variety of sounds, from eerie moans and grunts to elaborate songs. Whales and other marine mammals rely on sound cues for many things where we would use our vision: navigation, finding food, detecting predators and socializing. They live surrounded by natural sounds such as the sizzle of rain hitting the surface of the water and increasingly, their underwater world includes human-caused sounds, such as the whine of small boat motors and the throb of cruise ship engines.

Though researchers have been studying whale populations in Glacier Bay since the 1970s, little was known about the bay's underwater soundscape in which the whales live. Now, with the aid of an underwater listening device called a hydrophone, park scientists eavesdrop into the underwater world of whales, opening up a new dimension to consider when planning for the protection of this endangered species.

In May 2000, Glacier Bay National Park staff and U.S. Navy acousticians installed the hydrophone near the entrance to Glacier Bay. The hydrophone transmits underwater sounds through a cable to a computer

workstation at park headquarters. Data collected about underwater sounds, especially human-caused sounds, helps park managers evaluate vessel management policies to ensure minimal disturbance to the marine mammals that live here.

For example, since humpback whales do not eat when they are on their winter breeding grounds, they make up for it by feeding continuously on small forage fish during summers in Southeast Alaska. Yet research suggests that whales may move away from preferred feeding areas when disturbed by vessel sounds and that vessel sounds can prevent them from hearing vocalizations of other whales. This study has determined that the underwater world of Glacier Bay is a quieter place when vessels are required to travel at 10 knots rather than at 20 knots.

Underwater listening has already yielded unexpected recordings of male whales singing their mating songs while here in Glacier Bay. Until that time, it was believed males only sang on their winter breeding grounds near Hawaii. More discoveries about underwater sound may await us. To hear whale sounds recorded in Glacier Bay, visit our website.

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For more information on these and other research projects going on in the park, visit:

www.nps.gov/glba/go/projects.htm
www.absc.usgs.gov/glba



Wildlife Viewing

When the ice retreated in Glacier Bay, it left behind a scoured landscape of rocks and mud. In time, plants returned to the seemingly sterile land. Eventually animals returned to the land and waters within the bay. Today a wide variety of creatures call Glacier Bay home for at least part of the year, and the number could grow as more creatures find their way to this evolving landscape. As you explore Bartlett Cove or as you cruise up the bay, keep your eye out for some of these more frequently seen members of the community.

By Land

Moose, *Alces alces*: The largest member of the deer family is a recent newcomer to the bay. The first moose was spotted here in the late 1960s. Despite their tremendous size (bulls can weigh 1,600 pounds and cows 1,300 pounds), they can appear and disappear in thick brush with surprising stealth. Moose are usually



solitary, except for cows with calves and during the fall rutting season. Cows give birth in the spring to one or two small, delicate reddish calves, though usually no more than one survives. A calf will stay with its mother for two years before the cow drives it off as she prepares to have more young. Their diet includes willow leaves, grasses, herbs and aquatic vegetation. Only bulls grow antlers.

Mountain Goats, *Oreamnos americanus*: Arguably the most dapper of Glacier Bay's mammals, mountain goats sport thick white coats of hollow hairs (that keep them warm in extreme weather), accented by black horns and hooves. Goats may have been among the first land animals to recolonize Glacier Bay after the ice



retreated, coming over the mountains from Lynn Canal to the east. They are at home on the steep rocky cliffs in the mid-to-upper bay. The special shape and design of their hooves allows them to leap nimbly from ledge to ledge in search of grasses, herbs and low-growing shrubs. Seen at a distance, they are often mistaken for Dall sheep, which are found in the Interior.

Porcupine, *Erethizon dorsatum*: You may find this prickly member of the community high up in a cottonwood tree nibbling tasty tender leaves. Except for their footpads and nose, porcupines are completely covered with yellowish fur and quills, which are actually modified hairs tipped with barbs. A



threatened porcupine will turn its back-end toward the source of trouble to present an intimidating display of quills that firmly suggests the would-be predator reconsider its dinner plans. This large rodent (second largest in North America behind the beaver) performs a broad repertoire of grunts, whimpers and screams. Listen for them in the evenings "talking" to no one in particular.

Red Squirrel, *Tamiasciurus hudsonicus*: If you see a little red flash zipping up a tree trunk or leaping nimbly among the branches, chances are it is a red squirrel. These agile rodents spend their summer preparing for winter by collecting and storing



green spruce cones in their underground caches. Like forest alarms, they chatter unrelentingly when a threat—like you—is near. They are a comedy tour de force when they harvest dandelion seed heads or go out on a limb for a savory green alder cone, and it is worth your time to stop and enjoy.



By Sea

Steller Sea Lion, *Eumetopias jubatus*: Like all members of the eared seal family *Otariidae*, Steller sea lions can support themselves on their flippers while ashore, and their rear flippers pivot, allowing them to get around with surprising speed. In the water they become fluid, executing a



Photo by Jim Luthy

seemingly endless series of underwater flips, turns and rolls. Mature males can weigh almost 2,000 pounds, but females average only 600 pounds. During mating season, large bulls compete at established rookery sites on Glacier Bay's outer coast to collect harems of females. Unsuccessful and immature males often congregate at haul-out areas like South Marble Island. Though the number of sea lions is growing in the bay, the population in Western Alaska has decreased by 80 percent since the late-1970s leading to that portion of the population's current listing as endangered.

Harbor Seal, *Phoca vitulina*

richardsi: Harbor seals have a dappled gray coat that can be highly variable between individuals. A thick layer of fat allows them to keep warm in otherwise chilling



conditions. Unlike the sea lion, harbor seals have no external earflap and when out of the water, cannot support themselves on their flippers. On ice floes, they resemble plump sausages that move around by scooting on their ample bellies. In the water they display admirable grace as they hunt for fish. About 1,700 seals converge on Johns Hopkins Inlet each summer for pupping and mating. On-going research in the park indicates that the population in the inlet has declined 50 percent in the past decade.

Harbor Porpoise, *Phocoena phocoena*: At five feet long and about 120 pounds, harbor porpoise are the smallest cetaceans in Alaska waters. Often seen in groups of two to ten throughout the bay, they announce themselves by offering a brief glimpse of their small triangular dorsal fin cutting slowly



Photo by Bruce Paige

through the water surface when they come up to catch a breath. Harbor porpoise are generally dark gray with a slightly pointed face. They do not ride bow wakes, like their relative the Dall's porpoise, which are larger (6.4 feet and 300 pounds) and resemble small orca in their black and white coloration. Though Dall's porpoise can be seen in the bay, they are more often near the entrance and in Icy Strait.

Sea Otter, *Enhydra lutris*:

The sea otter population in the bay has grown from zero to over 1,200 in the last decade. Voracious eaters of things like crabs and clams, they exert a strong influence on their environment and scientists anticipate dramatic changes will take place



Photo by Alex Andrews

in the underwater world of Glacier Bay. Sea otters perform many of their daily tasks such as eating, bathing and sleeping while floating on their backs. Lacking a thick layer of blubber, otters instead have the densest fur of any mammal with up to one million hairs per square inch. Generally dark brown, their faces get whiter as they age.

Life's No Picnic

You are picnicking alone on an idyllic beach when a boat roars up out of nowhere. It stops just offshore from you. Its wake washes the beach, taking away half your lunch. People on the boat laugh and talk loudly. They click their tongues to get your attention. Camera flashes explode. You drop your egg salad and dash off into the underbrush, anything to get away.

You've just experienced what happens to wildlife when thoughtlessly approached by humans. The effects can be devastating. Steller sea lions tumble over one another as they stampede from haul-outs to get into the water, risking injury and expending valuable energy. Breeding birds flushed from nests leave eggs vulnerable to cooler temperatures and predators. Female harbor seals lose their newborn pups among the ice floes when they become separated before their maternal bond has been established.

To reduce disturbance to wildlife and protect sensitive areas, the park has regulations that define the minimum distance you must keep from animals in Glacier Bay. Some critical habitats are closed to humans and vessels for all or part of the year to allow animals to go about their business.

During your visit, you can help to protect wildlife by doing the following:

- Know and observe all minimum distances and closures. See Boating Guide, page 24.
- When viewing wildlife, approach and depart slowly and cautiously, which allows the animal to adjust to your presence.
- Use binoculars or a camera with a telephoto lens so you can view from afar.
- Avoid sudden movements or loud noises, which may startle animals.
- Don't approach large rafts of birds. Marine birds tend to gather in large groups for protection during periods when they are molting and flightless.

Remember that even if you maintain a legal distance, if the animal is reacting to your presence in any way you are too close. Move away and if the animal continues to react, you should leave the area.

As you admire Glacier Bay's wildlife, keep in mind that every day they struggle to find what they need to eat, reproduce, protect their young, and prepare for winter as they avoid becoming food for others. Indeed, life is no picnic for the wildlife of Glacier Bay.



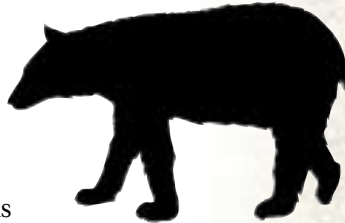
Bears

Glacier Bay National Park is home to brown (grizzly) bears, *Ursus arctos*, and black bears, *Ursus americanus*. Black bears are found primarily in the forested regions near the mouth of the bay, including Bartlett Cove, while brown bears live mainly in the more open regions closer to the glaciers.

Telling the difference between the two species can be tricky. Simply looking at color doesn't help. Black bears can be black, brown, blonde, even blue-gray—as is the case of the rare color phase found in Southeast Alaska called the “glacier bear.” Brown bears can be any shade from honey blonde to black. A few key physical characteristics can help clarify which type of bear you have spotted:

Black Bears

- Straight facial profile
- No shoulder hump
- Prominent ears
- Short, curved claws
- 3 feet at the shoulder
- 125 to over 300 pounds



Brown Bears (also called “grizzlies”)

- “Dish-shaped” facial profile
- Prominent shoulder hump
- Long, straight claws
- 3.5 feet at the shoulder/up to 9 feet when standing on hind legs
- Average 500 to 1000 pounds



Bear Safety While Fishing the Bartlett River:

- If a bear approaches while you have a fish on the line, cut the line.
- Clean fish in the river discarding remains in the mid-channel current.
- Keep your catch with you at all times in a backpack to allow for quick retreat from approaching bears.
- Never yield your catch or other food items.



Bears

Be Bear Savvy

While walking, hiking or camping in Glacier Bay, you may encounter a bear. The vast majority of these encounters do not result in human injury or property damage. You can help prevent injury to yourself or to the bear by taking a few basic precautions.

- Be alert.
- Make noise, especially in wind or near rushing water.
- Choose routes that offer good visibility.
- Travel in groups of two or more.
- Keep your personal items and food within immediate reach.
- Do not pursue or approach bears for photographs.
- Avoid streams with spawning fish.

Be a Smart Camper

Both campers and bears frequent the beaches of Glacier Bay. Bears only have six to eight months to acquire the calories and fat reserves needed for the entire year, and the shoreline is essential for food and travel. The following guidelines will minimize your disruption of bears and help keep them wild.

Cooking and storing food

- Cook and eat at least 100 yards from your tent and food storage area.
- Cook and eat in the intertidal zone.
- Wash cooking gear in marine waters.
- Be prepared to quickly stow all food should a bear suddenly approach.
- Keep all food, trash and other scented items in a bear-resistant food container (BRFC).
- At night, store BRFCs and clean cooking gear in brush or behind rocks away from animal trails 100 yards from camp, not in your boat.

Choosing a campsite

- Avoid areas with bear sign including an abundance of scat, animal trails, and chewed or clawed trees.
- Avoid active salmon streams.
- Pull your kayak and pitch your tent clear of the beach.
- Select a site that would allow bears room to pass at high tide.

Control your gear

- Keep gear together. The more spread out your gear is the more difficult it is to defend.
- To minimize potential bear damage to gear, consider breaking down your campsite daily.

Be aware of what goes on around your campsite.

When encountering humans, most bears will run away, approach curiously, appear to ignore the situation or act defensively. By staying alert, calm and tailoring your reaction to the bear's behavior and species, you increase the odds of a positive outcome for both you and the bear.



Close Encounters

The Bear:	What You Can Do:
May or may not be aware of you	<p>What is your activity and degree of mobility?</p> <p>You are hiking or kayaking (mobile):</p> <ul style="list-style-type: none"> • Change your course to avoid bear. • Monitor bear's movement. • If bear is close talk calmly to avoid surprising it. <p>You are camping or eating (not mobile):</p> <ul style="list-style-type: none"> • Keep all gear under direct control. • Group together without blocking bear's route. • Talk calmly to make bear aware of you. • Stand your ground.
Moves toward you	<ul style="list-style-type: none"> • Monitor bear's movement. • Stand your ground and talk calmly. • Allow bear to pass peacefully.
Becomes focused on you	<ul style="list-style-type: none"> • Stay together and stand your ground. • Be assertive and elevate your defense: clap your hands, wave your arms, use noisemakers, such as an air horn or banging pots together.
Charges	<ul style="list-style-type: none"> • Continue to stand your ground. • Use pepper spray if you have it. • Few charges end in contact.
If a bear makes contact	<p>Fight back vigorously. This is likely a predatory attack.</p>

Surprise Encounters

A bear may react defensively if surprised at close quarters or defending cubs or food. Its behaviors may include snorting, huffing, jaw popping, and charging. Your safety lies in assuring the bear that you are not a threat.

Stand your ground. Talk calmly to the bear. Attempt to move away slowly. If the bear begins to follow you, stand your ground. If the bear charges, use pepper spray if you have it. If it is a brown bear and makes contact, play dead. Lie flat face down on the ground and place your interlaced fingers behind your head. Do not move. A brown bear will often back off once it feels the threat has been eliminated. Black bear attacks are rare and tend to be predatory, so *never* play dead with a black bear.

If you are in your tent, fight any bear that attempts to enter.